

# Notice No.3

## Rules and Regulations for the Classification of Ships for Service on the Great Lakes and River St.Lawrence July 2016

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that paragraphs, Tables and Figures are not shown in their entirety. This Corrigenda Notice shows amendments only.

Issue date: June 2017

Amendments to	Effective date	Mandatory Instrument
Chapter 2, Section 1	Corrigendum	NA
Chapter 3, Section 5	Corrigenda	NA
Chapter 4, Sections 1 to 6, 9, 10, 12, 13 & 14	Corrigenda	NA

## Chapter 2

### Classification Regulations

#### ■ *Section 1* **Conditions for classification**

##### **1.1 General**

1.1.4 Except where stated otherwise by these Rules and Regulations, the relevant requirements of LR's *Rules and Regulations for the Classification of Ships July 2016* (~~hereinafter referred to as the Rules for Ships~~) will apply.

## Chapter 3

### Periodical Survey Regulations

#### ■ Section 5

#### Hull Special Survey – Hull requirements

##### 5.2 Preparation

5.2.5 The chain locker is to be cleaned internally and the anchors and chain cables (including stern anchor and chain cable where applicable, see ~~5.2.6~~ *Ch 3, 5.2 Preparation 5.2.6*) cleaned and ranged or placed in an accessible position for inspection. If any length of chain cable is found to be reduced in mean diameter at its most worn part by 12 per cent or more from its nominal diameter, it is to be renewed. The windlass is to be examined.

5.2.6 For those ships with a special service notation which includes areas off the East Coast of Canada, the stern anchor and chain cables are to be examined as required by ~~5.2.5~~ *Ch 3, 5.2 Preparation 5.2.5*.

# Chapter 4

## Ship Structures

### ■ Section 1

#### General

##### 1.1 Application

1.1.2 Except as indicated in these Rules, the relevant requirements of *Pt 3 Ship Structures (General)* and *Pt 4 Ship Structures (Ship Types)* of LR's *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5* (~~hereinafter referred to as the Rules for Ships~~) will apply. IACS *Common Structural Rules for Bulk Carriers* will not apply.

**Figure 4.1.1 Sketch of the map of the Gulf of St. Lawrence and River St. Lawrence showing the seaward and ~~fresh-water~~ freshwater limits of service**

1.1.4 For the application of these Rules under Canadian or United States registration, the ship requires to have load lines assigned in accordance with the requirements of ~~the Canada Shipping Act Load Line Regulations (Inland)~~ the relevant inland Load Line Regulations.

##### 1.2 Structural configuration

1.2.1 ~~These Rules will apply~~ This Chapter applies to single deck ships, of steel, welded construction, with or without self-unloading equipment, with side wing tanks and a double bottom throughout the cargo region, designed for the carriage of bulk dry cargoes. Machinery compartment will be arranged aft with accommodation arranged forward or aft. However, consideration will be given to other arrangements on the basis of the requirements of these Rules. See *Figure 4.1.2 Typical Great Lakes Bulk Carrier without self-unloading equipment*, *Figure 4.1.3 Typical Great Lakes Bulk Carrier with self-unloading equipment* and *Figure 4.1.4 Typical Great Lakes Bulk Carrier with recessed hopper structure with self-unloading equipment*.

##### 1.3 Class Notations notations

1.3.1 In general, ships complying with the requirements of ~~these Rules~~ this Chapter will be eligible to be classed **100A1 Great Lakes Bulk Carrier** with the specified operating service area notation **for Service on the Great Lakes and River St. Lawrence** and where applicable, with the descriptive note, **Self Unloading** stated in column 6 of the *Register Book*.

1.3.8 The notation **LI** will be assigned where an approved loading instrument has been installed.

##### 1.4 Definitions

1.4.6 **Position 1 and Position 2.** For the purpose of freeboard assignment in accordance with the requirements of ~~the Canada Shipping Act, Load Line Regulations (Inland)~~ the relevant National Authority Load Line Regulations, see *Ch 4, 1.1 Application 1.1.4*, the definition given in *Pt 3, Ch 1.6.5 Position 1 and Position 2* of the ~~Rules for Ships~~ *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5*, shall apply.

### ■ Section 2

#### Materials

##### 2.1 General

2.1.1 All materials, including steel castings and forgings used for sternframes, rudders, rudder stocks, rudder pintles, rudder palm bolts and propeller shaft brackets, are to comply with the relevant sections of the *Rules for the Manufacture, Testing and Certification of Materials, July 2016, incorporating Notice No. 1 & 2* (~~hereinafter referred to as the Rules for Materials~~) and *Pt 3, Ch 2 Materials* of the ~~Rules for Ships~~ *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5*, except as indicated in *Ch 4, 2.2 Rolled steel plates, strip, sections and bars* and *Ch 4, 2.3 Protection of steelwork* of these Rules.

2.1.2 The requirements for welding are given in *Pt 3, Ch 10 Welding and Structural Details* of the ~~Rules for Ships~~ *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5* and *Ch 13 Requirements for Welded Construction* of the *Rules for Manufacture, Testing and Certification of Materials, July 2016, incorporating Notice No. 1 & 2*.

*Existing paragraph 2.1.3 has been deleted.*

## 2.2 Rolled steel plates, strip, sections and bars

**Table 4.2.1 CSA Equivalent Steel Grades**

CSA Grade, MPa	260W	260WT	300W	300WT	350W	350WT
(k.s.i.)	(38W)	(38WT)	(44W)	(44WT)	(50W)	(50WT)
LR Grade						

**Note** 1. Steel may be accepted with a thickness of  $t \leq 12,5$  mm when supplied in the fine grained condition, and for thicknesses in the range of  $12,5 \text{ mm} < t \leq 50 \text{ mm}$ , steel may be accepted subject to it being fine grained and normalized. Additionally, for thicknesses in the range of  $12,5 \text{ mm} < t \leq 50 \text{ mm}$ , the IIW carbon equivalent value (CEV) is to be less than 0,45 % per cent.

## 2.3 Protection of steelwork

2.3.1 Pt 3, Ch 2,3 Corrosion protection of the Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5 is applicable except that for vessels for freshwater service only, it may be considered suitable not to apply protection to the underwater portion of the hull. The limit of service for fresh-water operation is the St. Lawrence River, west of the eastern end of the Ile d'Orleans, see Figure 4.1.1 Sketch of the map of the Gulf of St. Lawrence and River St. Lawrence showing the seaward and fresh-water limits of service.

2.3.2 The requirements of Pt 4, Ch 1,2.2 Protection of steelwork 2.2.2 to Pt 4, Ch 1, 2.2 Protection of steelwork 2.2.3 of the Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5 are to be complied with, except that the increase of 5 mm min. on the inner bottom plating, for cargoes to be regularly discharged by grabs, as per Pt 4, Ch 1,2.2 Protection of steelwork 2.2.2 of the Rules for Ships, on self-unloading bulk carriers, under the cargo holds, may be omitted.

## Section 3 Longitudinal strength

### 3.1 Definitions

3.1.1 The following symbols and definitions are applicable to this Chapter, unless otherwise stated:

$L_s$  = length of the vessel, measured as the distance, in metres, on the summer load waterline from the forward side of the stem to the after side of the rudder post or the centre of the rudder stock if there is no rudder post.

$B, D, T$  = are as defined in Pt 3, Ch 1,6.1 Principal particulars of the Rules for Ships Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5.

$k_L, k$  = higher tensile steel factor, see Ch 3, 2 Annual Surveys – Hull and machinery requirements, Material and Protection, and Pt 3, Ch 2, 1.2 Steel of the Rules for Ships Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5.

### 3.4 Hull bending strength

3.4.1 The symbols used in this sub-Section are defined as follows:

$M_U$  = standard still water bending moment in kN m (tonne-fm), see 3.4.5 Ch 4, 3.4 Hull bending strength 3.4.5

$M_W$  = design wave bending moment in kN m (tonne-fm)

$M_V$  = design springing bending moment in kN m (tonne-fm)

$M_L$  = design still water bending moment in kN m (tonne-fm)

$\bar{M}_L$  = maximum permissible still water bending moment, sagging (negative) and hogging (positive), in kN m (tonne-fm), see 3.4.14 Ch 4, 3.4 Hull bending strength 3.4.14

$\bar{M}_{L,Harb}$  = maximum permissible still water bending moment in harbour or equivalent environment in kN m (tonne-fm), see 3.4.15 Ch 4, 3.4 Hull bending strength 3.4.15

$\sigma$  = permissible combined stress (still water plus dynamic) in N/mm<sup>2</sup> (kgf/mm<sup>2</sup>), see 3.4.13 Ch 4, 3.4 Hull bending strength 3.4.13.

$Z_D, Z_B$  = actual hull section modulus, in m<sup>3</sup>, at strength deck and keel respectively, see Pt 3, Ch 3, 3.4 Calculation of hull section modulus of the Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5.

3.4.2 Vessels approved with the longitudinal strength requirements given in this Section should satisfy The Great Lakes Load Line (Main Hull) 1968 Strength Standard. The requirements given in this Section are applicable to vessels with length  $L_s$  between 122 metres and 320 metres.

3.4.5 The standard still water bending moment,  $M_U$ , hogging and sagging is given by:

$$M_U = 74,62 L_s^2 B T \times 10^{-3} \text{ kNm kN m}$$

$$(M_U = 7,607 L_s^2 B T \times 10^{-3} \text{ tonne-fm})$$

3.4.6 The hull midship section modulus about the transverse neutral axis, at the deck or the keel, is to be not less than:

$$Z_{min} = k_L 69,44 L_s^2 B Z_1 \times 10^{-8} \text{ m}^3$$

where

$$Z_1 = Z_0 + 0,551 K T$$

$Z_0$  = modulus coefficient given in Table 4.3.1 Table 4.3.1 Values of modulus coefficient,  $Z_0$   
 $K = 0,65 + 0,165C$  when  $M_L$  is equal or lesser than  $M_U$   
 = or

or

$$K = \frac{C}{2,12} \text{ when } M_L \text{ is greater than } M_U$$

The still water bending moment coefficient  $C$  is given by:

$$C = 28,41 \frac{M_L}{L_S^2 BT} \text{ when } M_L \text{ expressed in kN m}$$

$$(C = 278,71 \frac{M_L}{L_S^2 BT} \text{ when } M_L \text{ expressed in tonne-f m})$$

For draught larger than 8,6 m, the section modulus will be specially considered.

3.4.8 Scantlings of all longitudinal members of the hull girder based on the minimum section modulus requirements given in 3.4.6 Ch 4, 3.4 Hull bending strength 3.4.6 are to be maintained within  $0,67L_S$  amidships for  $\frac{L_S}{D} = 21$  and above, and within  $0,4L_S$  amidships for  $\frac{L_S}{D} = 17$  and below. Intermediate values are to be determined by linear interpolation.

3.4.9 The scantlings of all longitudinal continuous material may be tapered from the midship extremities as defined in 3.4.8 Ch 4, 3.4 Hull bending strength 3.4.8, to the fore and aft ends of the ship. Also see see also the relevant sections Sections within Pt 3, Ch 4 Longitudinal strength and Pt 3, Ch 5 Fore End Structure Ch 3, 2.5 Taper requirements for hull envelope of the Rules for Ships Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5 relating to taper and material outside of the mid-body section.

3.4.11 The design springing bending moment  $M_v$  is given by:

$$M_v = \frac{1042,58 Z_{\min}}{k_L} \left( \frac{Z_1}{L_S} \right) - 1,34075 \left[ \frac{D}{(T + 0,25B)} \right] - 0,34075 \text{ kN m}$$

$$(M_v = \frac{106,278 Z_{\min}}{k_L} \left( \frac{Z_1}{L_S} \right) - 1,34075 \left[ \frac{D}{(T + 0,25B)} \right] - 0,34075 \text{ tonne-f m})$$

3.4.12 The design wave bending moment  $M_w$  is given by:

$$M_w = \frac{699200}{Z_1 k_L} Z_{\min} (33,888 L_S^3 \times 10^{-9} - 28,366 L_S^2 \times 10^{-6} + 4,723 L_S \times 10^{-3} + 1,581) \text{ kN m}$$

$$(M_w = \frac{71280}{Z_1 k_L} Z_{\min} (33,888 L_S^3 \times 10^{-9} - 28,366 L_S^2 \times 10^{-6} + 4,723 L_S \times 10^{-3} + 1,581) \text{ tonne-f m})$$

$$M_w = \frac{699200}{Z_1 k_L} Z_{\min} (33,888 L_S^3 \times 10^{-9} - 28,366 L_S^2 \times 10^{-6} + 4,723 L_S \times 10^{-3} + 1,581) \text{ kN m}$$

3.4.13 The maximum permissible combined stress (still water plus dynamic) for hull vertical bending,  $\sigma$  within amidships region defined in 3.4.8 Ch 4, 3.4 Hull bending strength 3.4.8 under the standard still water bending moment defined in 3.4.5 Ch 4, 3.4 Hull bending strength 3.4.5, is given by:

$$\sigma = \frac{193}{k_L} \text{ N/mm}^2 \quad \left( \frac{19,67}{k_L} \text{ kgf/mm}^2 \right)$$

The actual hull vertical bending stresses at strength deck,  $\sigma_D$ , and keel,  $\sigma_B$ , are given by the following, using the appropriate combination of hogging and sagging bending moments to give sagging or hogging stresses:

$$\sigma_D = \frac{M_L \pm \sqrt{M_W^2 + M_V^2}}{Z_D} \times 10^{-3} \text{ N/mm}^2$$

and

$$\sigma_B = \frac{M_L \pm \sqrt{M_W^2 + M_V^2}}{Z_B} \times 10^{-3} \text{ N/mm}^2$$

3.4.14 The permissible still water bending moment,  $\overline{M}_L$ , is to be achieved in the maximum section modulus calculation. The permissible still water bending moment is not to be exceeded for all loading conditions. The permissible still water bending moments, sagging and hogging, are to be taken as the lesser of the following:

$$|\overline{M}_L| = \sigma Z_D \times 10^3 - \sqrt{M_W^2 + M_V^2} \text{ kNm}$$

or

$$|M_L| = \sigma Z_B \times 10^3 - \sqrt{M_W^2 + M_V^2} \text{ kNm}$$

3.4.15 The permissible still water bending moments, sagging or hogging, in harbour for the draught under consideration are not to exceed the following value:

$$\overline{M}_{L_{\text{Harb}}} = \overline{M}_L + 0,45 \sqrt{M_W^2 + M_V^2} \text{ kN m (tonne-f m)}$$

### 3.5 Hull shear strength

3.5.4 The following symbols are applicable to this Section, unless otherwise stated:

~~$I$ ,  $A_z$ ,  $Q_S$ ,  $Q$  = are as defined in Pt 3, Ch 4, 6.1 Symbols of the Rules for Ships.~~

~~$S_T$ ,  $\tau$ ,  $\tau_A$~~

$I$ ,  $A_z$ ,  $Q_S$ ,  $Q$ ,  $\tau$ ,  $\tau_A$  are as defined in Pt 3, Ch 4, 6.1 Symbols of the Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5.

$Q_w$  = design dynamic shear force calculated using  $Q_{wo}$  defined in 3.5.5 Ch 4, 3.5 Hull shear strength 3.5.5 in kN (tonne-f)

$\tau$  = permissible combined shear stress (still water plus dynamic), in  $\text{N/mm}^2$  ( $\text{kgf/mm}^2$ ), see 3.5.9 Ch 4, 3.5 Hull shear strength 3.5.9.

3.5.5 The design hull dynamic shear force,  $Q_w$ , at any position along the ship is to comply with the requirements of Pt 3, Ch 4, 6.3 Design wave shear force of the Rules for Ships Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5, except that  $Q_{wo}$  and  $K_2$  are to be taken as defined below:

$$Q_{wo} = \frac{\sqrt[3]{M_W^2 + M_V^2}}{L_s} \text{ kN (tonne-f)}$$

$$Q_{wo} = \frac{\sqrt[3]{M_W^2 + M_V^2}}{L_s} \text{ kN}$$

$$K_2 = 1,0$$

3.5.9 The permissible combined shear stress  $\tau$  (still water plus dynamic) is to be taken as:

$$\tau = \frac{110}{k_L} \text{ N/mm}^2 \left( \frac{11,2}{k_L} \text{ kgf/mm}^2 \right)$$

3.5.10 The design shear stress is to comply with the requirements of Pt 3, Ch 4, 6.7 Design shear stress of Pt 3, Ch 4, 6.7 Design shear stress of the Rules for Ships Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5. Value of  $Q_w$  used in calculations is to be taken as given in 3.5.4 Ch 4, 3.5 Hull shear strength 3.5.4.

### 3.7 Loading guidance information

3.7.3 New ships to which the Load Line Regulations (Inland) are applicable, will be assigned class, only after it has been verified that the level of intact stability is approved by the National Authority.

### 3.8 Hold mass curves

3.8.1 Hold mass curves are to be included in the Loading Manual and the Loading Instrument and cover any single hold and any two adjacent holds whilst in transit and during loading and unloading operations in harbour. The curves are to show the maximum allowable and minimum required cargo mass as a function of draught. The method adopted is based on the concept of retaining the same imbalance between cargo load and the buoyancy upthrust over the full draught range, and with the double bottom tanks empty.

3.8.2 Hold mass curves are to be prepared in accordance with LR ShipRight procedure Primary Structure of Bulk Carriers, May 2004, Section 8, as applicable to **BC-B** and **BC-C**, with no MP, ships.

## ■ Section 4 Deck structure

### 4.2 Deck plating

4.2.4 The thickness of the underdeck passage tunnel, where fitted, at the upper side shell stringer level is to be not less than the greater of Pt 4, Ch 1, Table 1.4.2 Lower deck plating of the Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5 or 9,5 mm in thickness.

## ■ Section 5 Shell envelope plating

### 5.1 General

5.1.3 The maximum wave head, ( $C_{WL}$ ) as per *Pt 4, Ch 1, Table 1.5.2 Bottom shell and bilge plating* and *Table 1.5.3 Side shell plating* of the ~~Rules for Ships~~ *Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5* is 0,5  $C_{WL}$ .

### 5.3 Bottom shell and bilge

5.3.1 The thickness of the bottom and bilge shell plating is to be not less than the minimum values given in *Pt 4 Ch 1, Table 1.5.2 Bottom shell and bilge plating* of the *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5* using  $C_{WL}$  as per *Ch 4, 5.1 General 5.1.3*.

### 5.4 Side shell and sheerstrake

5.4.1 The midship thickness of the side shell and sheerstrake plating is to be not less than the minimum values given in *Pt 4, Ch 1, Table 1.5.3 Side shell plating* of the *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5* using  $C_{WL}$  as per *Ch 4, 5.1 General 5.1.3*.

## ■ Section 6 Shell envelope framing

### 6.2 Longitudinal framing

6.2.1 The scantlings of the bottom and side shell longitudinals in the midship region are to comply with the requirements given in *Pt 4, Ch 1, Table 1.6.1 (a) Shell framing (longitudinal)* of the *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5* using  $C_{WL}$  as per *Ch 4, 6.1 General 6.1.3*.

### 6.3 Transverse framing

6.3.1 The scantlings of main and 'tween deck frames in the midship region are to comply with the requirements given in *Pt 4, Ch 1, Table 1.6.2 Shell framing (transverse)* of the *Rules and Regulations for the Classification of Ships, July 2016, incorporating Notice No. 1, 2, 3, 4 & 5* using  $C_{WL}$  as per *Ch 4, 6.1 General 6.1.3*.

## ■ Section 9 Bulkheads

### 9.3 Collision bulkhead

9.3.1 The collision bulkhead is to be positioned approximately 0,04  $L_L$  aft of the fore end of  $L_L$  (with  $L_L$  as defined in *Pt 3, Ch 1, 6.1 Principal particulars 6.1.1 6.1.8* of the ~~Rules for Ships~~ *Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5*). Other equivalent locations may be individually considered.

9.3.2 The scantlings are to comply with the requirements of *Pt 4, Ch 1, 9 Bulkheads* of the ~~Rules for Ships~~ *Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5*, except that the thickness of plating and modulus of stiffeners are to be not less than 12% per cent greater and 25% per cent greater, respectively, than would be required for a dry space.

### 9.4 Non-watertight screen hold bulkheads

9.4.4 The requirements of this Chapter apply to a vertical system of stiffening on screen bulkheads. They may also be applied to a horizontal system of stiffening or a combination, provided that equivalent end support and alignment are provided, see *Fig. 1.3.2 (a) and (b)* of *Pt 4, Ch 4* of the ~~Rules for Ships~~ *Figure 4.1.5 Typical screen bulkhead, with no self-unloading equipment fitted* and *Figure 4.1.6 Typical screen bulkhead, with self-unloading equipment fitted*.

## ■ Section 10 Fore peak end structure

### 10.1 General

10.1.3 The head ( $h_{T1}$ ) criteria to be used for shell envelope framing in *Pt 3, Ch 5, 6 Fore peak structure* of the ~~Rules for Ships~~ *Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5*, is to be as per *Section 6*.

## ■ Section 12

### Closing arrangements for deck and shell

#### 12.2 Means to ensure weathertightness

12.2.3 The spacing of the perimeter clamping devices shall satisfy the requirements of Pt 3, Ch 11, 4.2 Steel covers – Clamped and gasketed 4.2.14 4.2.19 and Pt 3, Ch 11, 4.2 Steel covers – Clamped and gasketed 4.2.21 of the Rules for Ships Rules and Regulations for the Classification of Ships, incorporating Notice No. 1, 2, 3, 4 & 5.

#### 12.4 Stiffeners

12.4.1 The scantlings and strength criteria of the hatch cover stiffeners are to be as follows:

- (a) For ships 110 m in length and greater, calculated with design loading for Position 1, not less than 1,22 tonne-f/m<sup>2</sup> 11,97 kN/m<sup>2</sup> (12 kPa) and for Position 2, not less than 0,97 tonne-f/m<sup>2</sup> 9,52 kN/m<sup>2</sup> (9,6 kPa), with an equivalent design head of 1,70 m and 1,35 m respectively. The product of the maximum stress thus calculated and the factor of 4,25 shall not exceed the minimum tensile strength of the material, with the maximum permissible deflection limited to not more than 0,0028 times the span.
  - (b) For ships 24,1 m in length, the design loading on the hatch cover for Position 1, may be 0,97 tonne-f/m<sup>2</sup> 9,52 kN/m<sup>2</sup> (9,6 kPa) and for Position 2, may be 0,73 tonne-f/m<sup>2</sup> 7,16 kN/m<sup>2</sup> (7,2 kPa) with an equivalent design head of 1,35 m and 1,01 m respectively.
  - (c) For intermediate lengths the values shall be obtained by linear interpolation.
- The maximum permissible shear stress is not to exceed 108/k N/mm<sup>2</sup> criteria shall be as per Table 11.2.3 Effective breadth  $e_m$  of plating of primary supporting members of the Rules for Ships.

#### 12.5 Hatch coamings

12.5.1 Hatch coamings, either vertical at sides or ends or sloped at sides, are to have a minimum thickness of 11 mm. The top edge is to be stiffened by a horizontal flat bar with a minimum width of 75 mm or equivalent, 75 mm min. in width.

12.5.2 Additional support is to be given to the hatch coamings by the fitting of stays not more than 3 m apart. Each stay is to have a minimum thickness of 9,5 mm and, min. 9,5 mm thickness, is to be suitably supported under the deck.

## ■ Section 13

### Ventilators, air pipes and discharges

#### 13.1 General

13.1.1 These requirements are to conform with the relevant National Authority Load Line Regulations. where relevant, with the requirements of the Load Line Regulations (Inland) of the Canada Shipping Act.

## ■ Section 14

### Equipment

#### 14.2 Equipment Number

14.2.2 The 'Equipment Number (NL)' to be used, is given by:

$NL = 0,30L_sBD + \text{additions listed below}$

- (a) for 1st tier superstructure or deckhouse, 17,6% per cent of the product of their length, breadth and height in metres;
- (b) for 2nd tier deckhouses and other erections, 13,2% per cent of the product of their length, breadth and height in metres, where  $L_s$ , B and D are is given in Ch 4, 3.1 Definitions 3.1.1.

14.2.3 Only deckhouses and other erections having a breadth greater than B/4 are to be included.

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